

CA20N PM85

-70E55

Ontario. Advisory committee on
pollution control

[General publications]

[G-1] Report to the Advisory
Committee on Pollution Control on
environmental management of recreat-
ional waters in cottage areas of
Ontario. 1970.

CA20NPM 85

-70E55

Government
Publications

General publications

REPORT

to

THE ADVISORY COMMITTEE ON POLLUTION CONTROL

on

ENVIRONMENTAL MANAGEMENT OF RECREATIONAL WATERS

IN COTTAGE AREAS OF ONTARIO



Ontario

Prepared by an Interdepartmental Task Force

Appointed by

The Advisory Committee on Pollution Control

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March, 1970

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ENVIRONMENTAL MANAGEMENT OF RECREATIONAL WATERS

IN COTTAGE AREAS OF ONTARIO

1. INTRODUCTION

The Ontario Government is concerned about the reported pollution of recreational waters in the Province. These conditions have been attributed in numerous instances to unsatisfactory sewage disposal procedures at cottages and other shoreline premises. The need for effective action has been recognized, and a meeting to discuss the required program was arranged recently by the following Cabinet Ministers:

The Honourable W. Darcy McKeough, Minister of
Municipal Affairs;

The Honourable George A. Kerr, Q.C., Minister
of Energy and Resources Management;

The Honourable Thomas L. Wells, Minister of Health.

This meeting was held on February 18th, 1970 and was attended by the Minister of Energy and Resources Management, the Minister of Health, and several senior officials of the concerned Departments.

The consensus of the meeting was to establish a task force under the Advisory Committee on Pollution Control to examine the problem and prepare recommendations for:

- an aggressive and effective program to achieve significant improvements during 1970; and
- a continuing program designed to control shoreline sewage disposal systems and thereby provide future protection of recreational waters in Ontario.

The task force was formally constituted by the Advisory Committee on Pollution Control at its monthly meeting held on February 20th. Departmental representatives were named for the task force as follows:

Health	-	W. M. Walkinshaw
Municipal Affairs	-	G. M. Farrow
Energy and Resources Management	-	R. G. Barrens
Ontario Water Resources Commission	-	G. R. Trewin
Lands and Forests	-	G. A. Simons

The task force was requested to complete its assignment within two weeks and have its report available for discussion on March 10th by the Advisory Committee on Pollution Control.

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2. SUMMARY

2.1 Summary of Problems

There are between 140,000 and 200,000 cottages in Ontario at the present time, and this number is increasing at the rate of at least 11,000 each year. Recent surveys by the Department of Health and the Ontario Water Resources Commission indicate that 10% of existing cottages are contributing to water pollution.

2.2 Summary of Recommendations

The task force recommends:

1. That a program of investigation and correction be undertaken during 1970 for a minimum of 4,000 cottages on selected lakes.
2. That all land in the Province of Ontario be placed under subdivision control and building control.
3. That development plans for recreational areas be provided.
4. That uniform minimum standards for private sewage disposal systems be adopted throughout Ontario.
5. That an increase in the staff and authority of the Department of Health and local health agencies be provided.
6. That public information programs be expanded.

Detailed recommendations are provided in Section 10.2.2. of this report.

2.3. Conclusions

Although an intensive program of investigation and correction should be initiated during 1970, because of the magnitude of the existing problem and the annual increment of new cottages it is emphasized that only a major revision of the present control system will achieve the desired results.

3. TERMS OF REFERENCE

The following specific terms of reference for the task force were established in consultation with the Chairman of the Advisory Committee on Pollution Control:

- 3.1 To review existing reports dealing with pollution of resort lakes and define the Ontario problem.
- 3.2 To examine the responsibilities of existing agencies.
- 3.3 To develop and precisely define methodology for dealing with the problem.
- 3.4 To determine new legislation or regulations needed to undertake the program.
- 3.5 To prepare a priority listing for the total Ontario problem.
- 3.6 To recommend what should be done this year and what additional staff and costs are entailed.
- 3.7 To establish a definite policy to assist the Department of Municipal Affairs in dealing with cottage subdivision approvals both short and long term.

4. OBJECTIVES OF THE TASK FORCE

The objectives of the task force are to recommend policies and operating procedures, supplemented if necessary by additional legislation and regulations:

- 4.1 to correct existing unsatisfactory sewage disposal systems in recreational areas, and to establish guidelines for the processing of applications for summer cottage developments now on hand; and
- 4.2 to ensure that future development and use of recreational areas will be well managed to protect water quality.

5. GENERAL STATEMENT OF THE PROBLEM

The problem is how to combat the increasing pollution of our recreational waters and adjacent land areas resulting from inadequately controlled development.

Pollution in this context means anything that impairs public enjoyment of the recreational facilities provided by the water and the surrounding area. Impaired enjoyment might result from undesirable growth of aquatic weeds and algae, high turbidity, oil films, chemical pollution, or the presence of bacteria beyond acceptable levels. Other impairments associated with our enjoyment of recreational lakes and areas are abnormal water level changes, interference with fish and wildlife populations, excessive noise or odours, litter of land or water, air pollution, interference with scenic views, and destruction of natural beauty.

Behind the basic problem of pollution and impaired enjoyment are attitudes, policies, and procedures which have all contributed to the creation of the problem. The correction or removal of these causes is, in itself, a problem which must be solved if pollution is to be prevented in the future.

Thus, the objectives of the task force were designed to deal initially with the existing problem by recommending an immediate and on-going program of detection and correction of defective sewage disposal systems, and secondly to recommend policies, programs, and legislation designed to provide satisfactory long-term management of recreational areas.

6. EXISTING CONTROLS

6.1 Department of Municipal Affairs

The primary approval of new cottage development in recreational areas is a responsibility of the Department of Municipal Affairs by virtue of powers provided under The Planning Act. This is exercised in consultation with several other Departments and agencies of government. Other agencies having a significant influence on approval decisions include the Local Board of Health, Department of Health, Ontario Water Resources Commission, Department of Lands and Forests and the Department of Energy and Resources Management. The multiplicity of agencies to be consulted is a contributing factor to the complexity and difficulty of the approval process. Municipalities have authority under The Planning Act to adopt subdivision control and land use control by-laws. These powers are at present not being exercised widely enough, and, as a result a very useful control is being inadequately used. In the recreational areas the majority of proposals are for cottage development on land where municipal services are not proposed. In such instances a chief consideration in appraising a proposed plan of subdivision is the feasibility of private sewage disposal and water supply. The responsibility for making this critical recommendation rests with the Medical Officer of Health or the Northern Ontario Public Health Service of the Department of Health. Where a proposed development includes community services for water and sewers the main advisory agency to the Department of Municipal Affairs is the Ontario Water Resources Commission. If

the proposed development is approved the Ontario Water Resources Commission will have regulatory control over the design, installation and operation of water and sewerage systems.

6.2 The Department of Health and the Local Health Agencies

The Public Health Act.

The local health agencies, under authority provided in The Public Health Act, give approval to septic tank installations and recommend action regarding proposed septic tank subdivisions. They are thus responsible for the inspection and control program.

A technical advisory service is provided by the Department through a central engineering service and a newly developed system of regional engineering offices. The engineering service also conducts research into private sewage disposal and publishes a guideline booklet on septic tank systems. On request from the Department of Municipal Affairs or a local health agency the Department will comment on proposed subdivisions, official plans, and local zoning by-laws, any of which may influence private sewage disposal construction.

In territories without municipal organization which are not included in a health unit, the Department's Northern Ontario Public Health Service performs a role similar to that of the health units as described above.

It should be noted that the actual inspection and approval authority presently rests entirely with the local health agencies, and, except as noted for the Northern Ontario Public Health Service,

the Department has no authority under the Act to inspect premises and issue orders for correction or closure.

Important sections of the Act are as follows:

Schedule B, Section 14 of the Act provides the medical officer of health with basic control over septic tank systems.

Section 122 of the Act allows for the expansion of the provisions of Schedule B to assist the medical officer of health in regulating the installation and approval of septic tank systems. Also, provision is made for the sanitary code used in areas without municipal organization. (Ontario Regulation 277/62 as amended)

Sections 82, 83, 86 and 92 of the Act deal with the correction of nuisance conditions.

6.3 Ontario Water Resources Commission

An important objective of the Ontario Water Resources Commission is to provide water quality control in provincial water by:

- setting water quality objectives;
- performing water quality surveys;
- monitoring and surveying water quality;
- promoting, financing, approving, and inspecting effluent producing sewage treatment works.

For legislative detail comment is provided on pertinent sections of The Ontario Water Resources Commission Act.

A new program providing for the retention of refuse and sewage on pleasure craft for on-shore disposal was commenced January 1st, 1969. The boating regulation is made under the authority of Section 47 of The Ontario Water Resources Commission Act.

Section 27 of The Ontario Water Resources Commission Act makes provision for the prosecution of offenders, including cottage or resort owners, discharging inadequately treated waste to provincial waters. Also, under the authority of Section 31 of The Ontario Water Resources Commission Act, approval must be obtained before effluent producing sewage treatment works are installed. The same section also makes provision for issuing an order or direction to a person to correct treatment problems. Section 38 of the Act empowers the Commission to make an order to a municipality regarding operation, or for the construction or modification of a sewerage system, to meet the requirements of the Commission.

Section 32 of The Act makes provision for holding pre-approval public hearings on effluent producing sewage treatment works. This is to ensure that consideration is given to other land uses which may be affected by the planned works.

6.4 Department of Lands and Forests

Under the provisions of specific Acts the Department of Lands and Forests controls Crown land, approval for construction of certain dams, fish huts, and fish ecology, pertinent sections of which are listed hereunder along with policy comments.

The Public Lands Act.

Section 2 of the Act provides the Minister with authority for management, sale and disposition of Crown land.

Section 6 of the Act empowers the making of regulations.

Section 16 of the Act authorizes the Minister to designate any area in territory without municipal organization as a restricted area and to control by permit building therein on both private and public lands.

Section 27a of the Act prohibits anyone from depositing without authority material of any kind on Crown land whether or not covered by water, and provides penalties.

As a policy no cooking or toilet facilities are permitted in authorized buildings on water lots.

The Lakes and Rivers Improvement Act.

Section 9 of the Act authorizes the Minister to control location and type of dams.

Section 30 of the Act prohibits depositing trees, tops and limbs in lakes or rivers.

The Game and Fish Act.

Section 84.4 of the Act empowers the Minister to regulate and control ice-fishing huts.

The Federal Fisheries Act.

Section 33 of the Act prohibits throwing deleterious substances, dead fish, chemicals, mill waste, etc. in waters.

7. REVIEW OF AVAILABLE INFORMATION

7.1 General

The magnitude of the problem is demonstrated by information obtained from reliable sources, including the Department of Municipal Affairs, the Department of Tourism and Information and the Ontario Hydro-Electric Power Commission. The number of existing cottages served by private sewage disposal systems is conservatively estimated at 140,000 although the actual figure might be as high as 200,000 or more. However, it is important to recognize that the annual increment of new cottages is approximately 11,000, which is the number for 1970. The following information will describe pollution studies which have proved that 10% of the cottages investigated had defective sewage disposal facilities and were contributing to water pollution.

7.2 Pollution Studies

Some information on the quality of waters in recreational lakes and on the extent to which summer cottage developments are contributing to pollution on selected lakes is available from recent government surveys. There are numerous O.W.R.C. reports on water quality in lakes and rivers including some of recreational waters. The latter include studies of the Muskoka Lakes, a survey of Little Panache Lake, and a brief survey of Stony and Clear Lakes in the Kawartha region made in 1969. The Commission has also reported on the biology of Riley Lake in Muskoka District. The Department of Health has just completed a three-summer study of pollution from cottages on a small sample of recreational

lakes (13 lakes) to get a better understanding of topographical, design and use factors which are associated with failed or failing sewage, laundry and kitchen waste disposal systems in summer cottages. The final report on this work is being prepared. This will provide a detailed analysis of about 1,800 cottages. From the preliminary data, the following information has been extracted to form a basis for estimating the approximate percentage of cottages which will be found to be contributing directly to the pollution of the lake on which they are situated. Table I gives the data.

TABLE I

Proportion and Percentage of Cottage
Waste-Producing Systems Found to be Contributing
to Lake Pollution by Type of System

(From 6 Lakes Studied in 1967 and 1968)

Type of System	Total Number of Systems Inspected	Number of Systems Proven to Be Contributing To Pollution	Percentage of Polluting Systems
Sewage Disposal	1,197	97	8.0%
Kitchen Waste Water	1,089	81	7.4%
Laundry Waste Water	258	14	5.4%

Table 2, following, deals with the same lakes and other systems that could not be proven to be contributing to pollution but which were, nevertheless, considered liable to cause pollution.

TABLE 2

Proportion and Percentage of Cottage
Waste-Producing Systems Considered as Potential Polluting
Although Direct Pollution Could Not Be Proven

Type of System	Total Number of Systems Inspected	Number of Potential Polluting Systems	Percentage of Potential Polluting Systems
Sewage Disposal	1,197	104	9%
Kitchen Waste Water	1,089	282	26%
Laundry Waste Water	258	123	48%

Criteria for classifying a system as potential polluting in Table 2 include - too close to the lake, too close to the ground water table, insufficient soil, faulty design or in poor repair.

It is important to realize that there are many possible sources of pollution of lake waters in addition to seepage or runoff from cottage developments with defective sewage systems. These other sources of pollution include sewage from boats, oil and gasoline spilled from boat motors, inadequately treated effluents from municipal systems or commercial or industrial establishments, runoff from swampy areas rich in organic matter, land drainage from farmlands containing plant nutrients and

organic matter of animal origin, and inflowing streams carrying pollution from sources remote from the lake under study. Even air pollutants may be deposited in the lake waters and have a significant effect on quality, as has happened in the Sudbury area as a result of sulphur fumes.

Pollution may be said to have two dimensions relating to quantity and a third dimension relating to effect. A combination of all three dimensions is necessary to an understanding of the pollutorial significance of a set of measurements of a particular source of a pollutant. The QUANTITY of a pollutant is expressed as the product of two numbers - the first expresses the CONCENTRATION PER UNIT VOLUME (OR WEIGHT) and the second number gives the measure of the VOLUME OR WEIGHT OF WATER to which the concentration applies. Hence the formula:

$$P = C \times V$$

where P = TOTAL POLLUTANT
e.g. LBS. OF BIOCHEMICAL OXYGEN DEMAND PER DAY (B.O.D.)

C = CONCENTRATION OF POLLUTANT
e.g. parts per million by weight of 5-day 20°C B.O.D.

V = VOLUME (OR WEIGHT) OF WATER,
e.g. millions of pounds of water per day.

It will be noted that the total load of the pollutant varies directly as the volume of flow of the effluent stream for a given concentration of the pollutant. A source with a big flow is much more significant than a source with a small flow if the concentrations are the same.

The third dimension describes the type of pollutant and the nature of its effect on the water quality and hence on the ecological systems using the water and affected by its quality.

In cottage pollution studies it is very difficult, and frequently impossible, to estimate or to measure the volume of flow reaching the lake unless no attempt is made to treat the sewage in the soil and all the waste water is discharged directly. An upper limit to possible flow can be established from water consumption figures either by metering or estimation.

The information presented above establishes that cottages are a part of the pollution problem and that immediate remedial measures and long term controls are needed.

Specific problems in administration and regulation are considered in the following section.

8. SPECIFIC PROBLEMS IN ADMINISTRATION AND REGULATION

Listed in point form below are the administrative and regulatory problems which have been identified.

Problem No. 1 - Lack of universal subdivision control and part-lot control.

Problem No. 2 - Severances without Registered Plan where there is subdivision control and the Health Unit or Department of Health are not consulted.

Problem No. 3 - (a) Certain areas of the Province are not covered by building regulations requiring that a building permit be issued prior to construction.

(b) No requirement for Health Unit approval before building permit issued.

Problem No. 4 - Lack of uniformity of private sewage disposal systems, practices and standards.

Problem No. 5 - Failure of municipalities to pass by-laws to assist Health Unit authorities in the regulation and inspection of sewage disposal systems.

Problem No. 6 - Lack of staff in Health Unit to adequately supervise existing and new sewerage systems.

- Problem No. 7 - The rapidly increasing demand for cottage lots is bringing pressure for the development of marginal land, including the Precambrian Shield area, with an accompanying increase in pollution problems. Also, the increasing winterization of cottages puts an added load on sewage disposal systems which were designed for part-time use in the summer only.
- Problem No. 8 - Lack of master plan for development of recreational areas, e.g. undesirable industrial development may occur in an ideal recreational area.
- Problem No. 9 - Lack of lake development planning and capacity plans. At present, when a proposal for resort development is submitted only the characteristics of the specific site are considered, such as its suitability for building lots or for septic tank operation. Very little consideration, if any, is given to the effects that the development would have on those many facets that the aquatic environment, the shoreline and backland are called upon to provide. Also, very little consideration is given to the relationship between the number of people who can use a lake for any given purpose and its depth, area, flow, shape, etc.
- Problem No. 10 - Induced nutrient enrichment of recreational waters.
- Problem No. 11 - Sewage, refuse and oil pollution from boats.

Problem No. 12 - Pollution of water as a result of ice-fishing activities.

Problem No. 13 - Lack of authentic public information and the dissemination of misleading information on pollution and subdivision control problems.

Problem No. 14 - The general assumption by developers, municipalities, certain local health authorities and others that 15,000 square feet without any municipal services or 7,500 square feet with one municipal service is an acceptable lot size regardless of the soil or topographic conditions or the extent of existing or proposed development.

Problem No. 15 - Some health authorities are at present recommending approval of certain lots on plans of subdivision on the basis of pit privies where there is insufficient soil for a septic tank system, whereas it is well known that most cottagers will eventually change from pit privies to an indoor flush toilet system.

Problem No. 16 - The volume of new subdivision lots submitted for approval this year is such that, under present policies, more potential pollution problems may be created than will be corrected in this year's proposed abatement program. At this moment there are 171 proposed plans of subdivision for cottages before the Department of Municipal Affairs for consideration. These plans contain more than 7,000 lots.

Problem No. 17 - The present legislation does not give the Department of Health the authority to enter upon private premises for the purposes of inspection, nor the authority to issue orders for necessary correction work or to order the closing of premises if the orders are not obeyed. These powers are essential for the 1970 program recommended in this report.

Problem No. 18 - There is an apparent lack of funds to provide adequate inspection services for lots which are not served by municipal sewers.

9. CONCLUSIONS ON NEED FOR ACTION

There is a growing concern and interest by the public in the quality of water in cottage areas. The requirement for high quality water is especially important when it is realized that in most instances the purpose of a cottage is to allow an urban dweller to escape the stresses of city life to enjoy a natural pollution-free environment.

With an increasing number of water quality problems in cottage areas, government, municipal and local agencies are faced with two tasks; the correction of existing problems, and the prevention of new problems. Increasing demand for cottage lots is bringing pressure for the development of marginal land including the Precambrian Shield area with accompanying aggravation of pollution problems and, also, the increasing winterization of cottages puts added load on sewage disposal systems that were designed for seasonal summer use only. In some areas cottages are being converted to permanent homes for retirement and in other cases workers employed by new industries are being encouraged by government action to locate in cottage areas. Many factors are responsible for increasing both the cottage density and their use in recreational areas.

Difficulties are encountered in installing conventional septic tank systems where the soil cover is thin and the topography is rocky and undulating, a terrain prevalent in the Precambrian Shield. The rocky nature of the topography in most recreational areas, the rough shorelines and the location of cottages on islands, all preclude the installation of sanitary sewer systems. Even if sanitary sewers were installed there is still the problem of providing a sufficient degree of treatment for an effluent to be discharged to recreational waters.

A new concern is the induced eutrophication of our small lakes by the discharge of inadequately treated waste waters from any source. One instance was recorded where a small lake was irreparably harmed by the discharge of laundry wastes from private cottages. The excessive discharge of nutrients to a lake may increase algal populations resulting in reduced clarity, tastes and odours in drinking water, and obnoxious odours along the shoreline from decaying algae on the beaches. In view of the added concern over nutrient levels, superimposed on the continuing need to prevent bacteriological contamination, the methods of controlling wastewater disposal in recreational areas should be fully reviewed.

The problem situation now existing is the result of a number of factors including a lack of public knowledge of the steps individuals can and should take to avoid pollution. There is a need for better co-ordination of government programs to achieve more effective and efficient controls, and certain gaps exist in the procedural and regulatory arrangements. In addition, there is a deficiency in available manpower in the field to control private sewage disposal systems.

Specific actions are required:

- to find sources of pollution and to have them corrected;
- to strengthen regulatory controls and provide for provincial standards;
- to obtain more detailed background knowledge of nutrient levels against which future changes can be measured;

- to provide more stringent controls on development of land for recreational use;
- to create an overall master plan which will transfer the initiative from the developer to the provincial planning authority; and
- to develop a public information program on pollution problems supported by guideline booklets on specific subjects.

10. RECOMMENDATIONS FOR CONTROL PROGRAM

10.1 Field Surveys

10.1.1 General

The field surveys will consist of investigations of shoreline establishments and of water quality on selected lakes and rivers to locate and correct existing or potential sources of pollution in recreational areas. A priority list for the selection of the sequence in which lakes will be visited is recommended in 10.1.3 of this report.

For 1970 it is considered necessary to make both identification and follow-up of problems a Provincial responsibility. Some local health agencies have stated that this program should be solely a Provincial function. Other local health agencies have indicated their willingness to undertake this work if funds or staff are provided for this purpose. However, the consensus of the meeting held on February 18th to discuss the pollution of recreational waters was that an aggressive and effective program will be undertaken to achieve significant improvements during 1970. Accordingly, it is apparent that the program for the current year must be under direct Provincial control. This approach is not intended to exclude participation by local health agencies and indeed such cooperation will be welcomed.

10.1.2 Procedures

The field survey program will provide for detection and correction of defective installations, supplemented by a water quality survey of the associated lakes and rivers. It is designed to provide a pattern which can be used on a continuing basis to minimize the future occurrence of pollution from shore based establishments such as cottages after the presently existing unsatisfactory situations are cleaned up. Little is known now about the time that may be required to complete the clean up of a lake but almost certainly it will require more than a single year because repeated visits may be necessary before the owner or occupier can be interviewed and the problem discussed, arrangements made for necessary work, and final inspection made to ensure that all recommendations have been carried out. It is considered that the field staff responsible for bringing about correction should work directly behind the problem detection people so that problems of misunderstanding about the location of premises and the nature of the defects will be minimized. The staff responsible for the correction program will require more knowledge of septic tank design and the implications of difficult soil and other topographical conditions, costs, and the practicability of alternative remedial measures, than will the field crews doing the detection survey.

The 1970 program will constitute a field testing of these proposals and as a result of the experience gained in 1970 improvements in program design may be possible in subsequent years.

The proposal would establish a permanent force nucleus of a very few people with the provision of reusable equipment, and budget for summer student casuals to form the bulk of the work force each year. An intensive training course of about two weeks' duration will be required each summer for the problem detection group. Estimates have been made on the basis of 4,000 cottages to a field survey group as a one year task. As mentioned above, the correction problems will require more than one year to complete for the 4,000 cottages surveyed. Additional units could be added to increase the rate of dealing with problems but there may be difficulty in recruiting experienced permanent staff above two units.

The Department of Health will be responsible for the field detection and correction of polluting establishments and the Ontario Water Resources Commission for the water quality of lakes surveyed. Overall direction will be provided by a Project Engineer. An overall directing committee should be established and this is recommended. In the Department of Health would be a total of 27 people engaged in the program during the period June to early September. Of these the Project Engineer is now on the staff of the Public Health Engineering Service. Additional permanent staff would number 10, consisting of a head office clerk, a supervising engineer, 2 supervising inspectors and 6 correction staff.

From the budgeting point of view for 1971 and subsequent years the actual increase will be less than the apparent

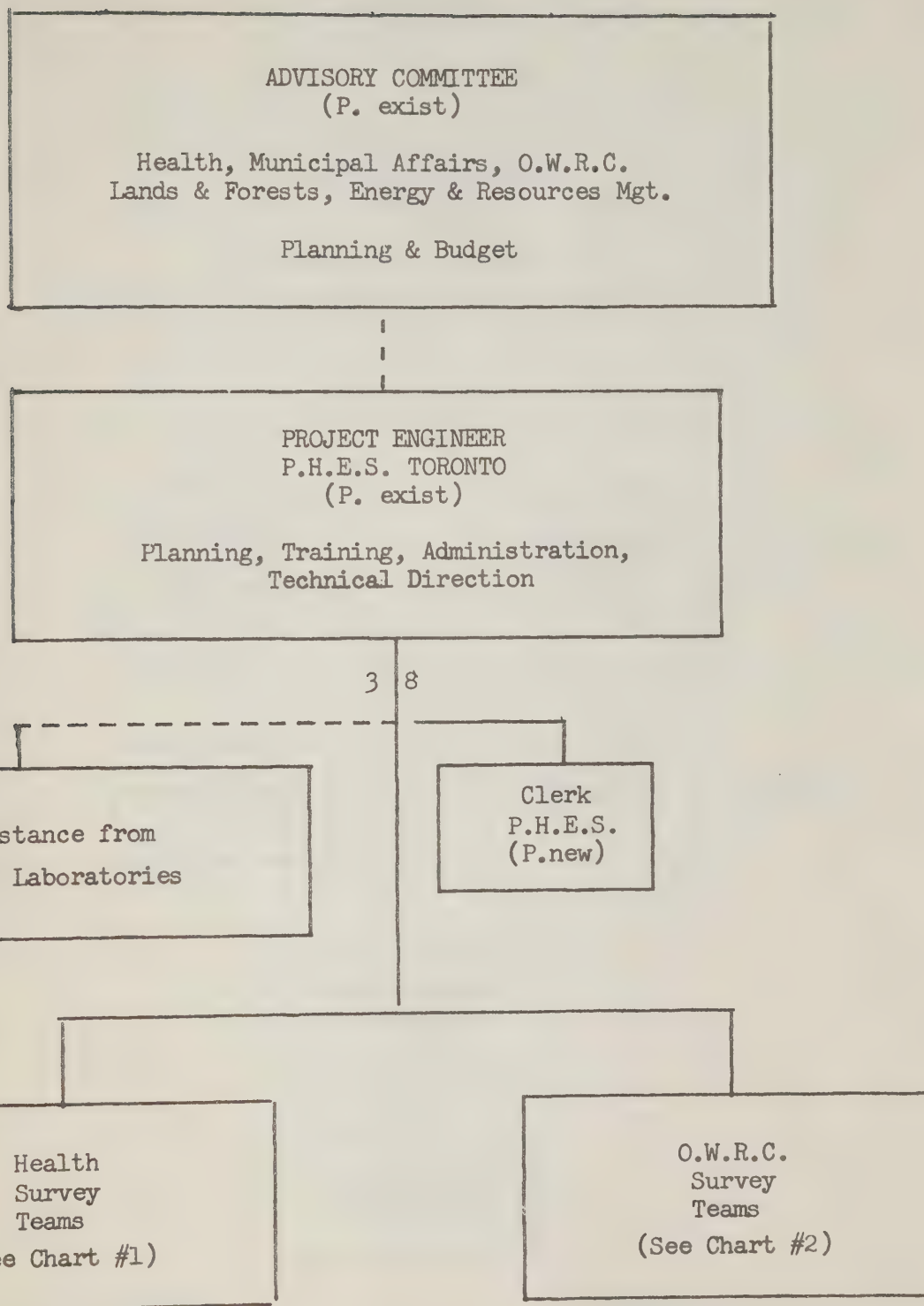
increase because the Department of Health program, which has been active since 1967, and which in 1970 provides for 9 casual staff, will be integrated with the new program. For 1970, commitments have already been made to assist the Department of Lands and Forests by providing lake establishment survey teams and to complete a survey of the cottages in the Thousand Islands area at the request of the Leeds, Grenville and Lanark District Health Unit, which was started with the assistance of the Ontario Water Resources Commission in 1969. Unless these plans are changed in 1970, the 9 men already budgeted for will be used in this work which would go on in parallel with the work now proposed.

Water quality surveys should be undertaken in conjunction with the shoreline surveys. The basic water quality program will consist of bacteriological sampling conducted on a weekly basis during the period of the on-shore surveys. Additional surveys will be made before and after the on-shore investigations in order to provide continuing information on water quality improvements. On a smaller scale, samples will be collected for chemical and physical analyses to fully determine water quality including nutrient levels. In addition, a biological study is suggested to determine how the specific waters rate according to the trophic scale. As conditions require, studies should be made to determine the effects of nutrients discharged from approved effluent-producing sewage works. New treatment procedures would be recommended at these sites if necessary.

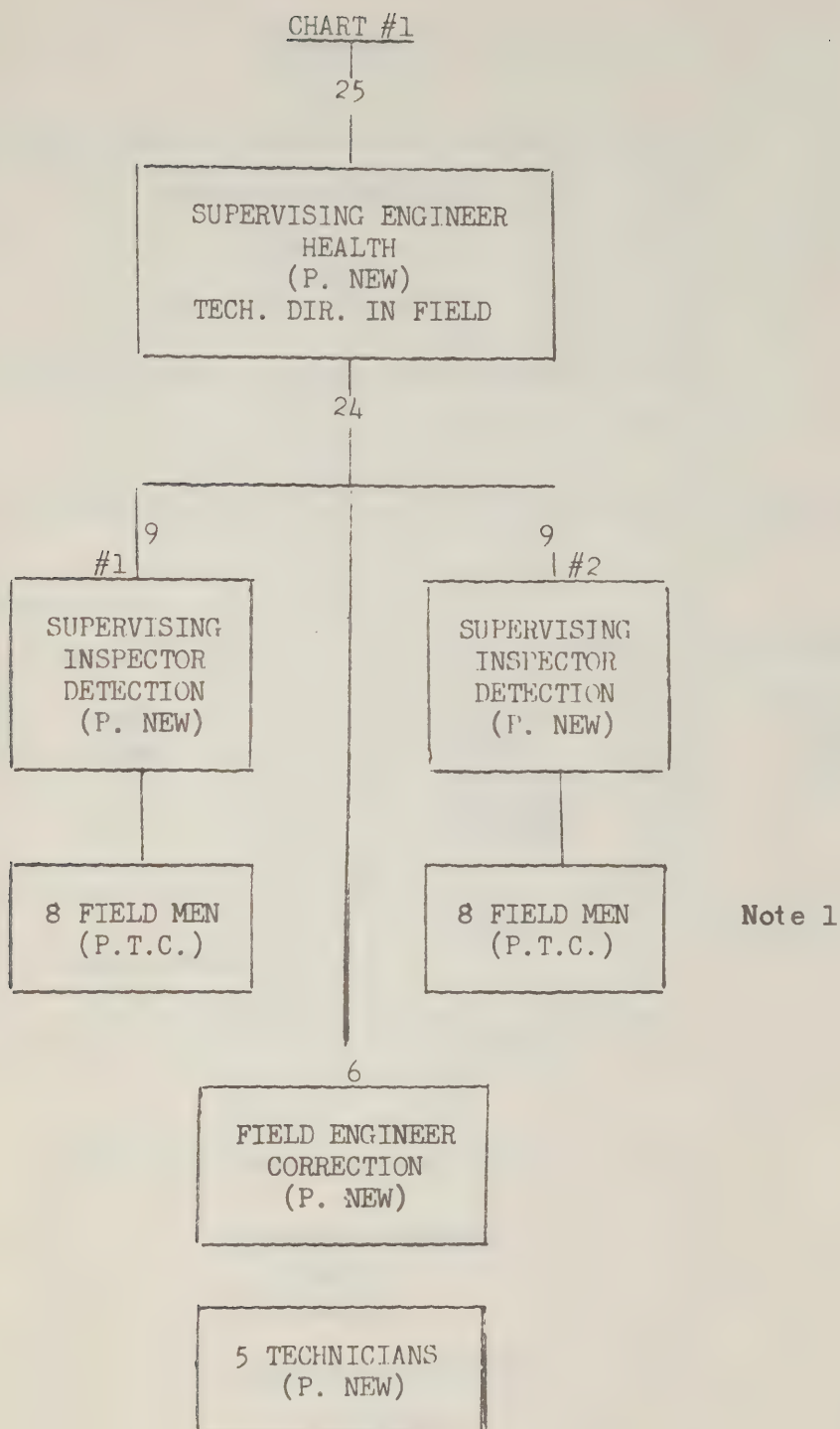
The basic water quality evaluation program will require a supervisory engineer and two survey teams each consisting of a technologist and summer casual. The bacteriological samples will be processed at a portable laboratory staffed by two casual technicians.

The review and correction of faulty effluent producing sewage works will be the responsibility of existing field staff. Studies to measure the trophic state of the lake would be undertaken by a biology team directed by a biologist.

The organization charts following indicate the structure of the project group.

LEGEND

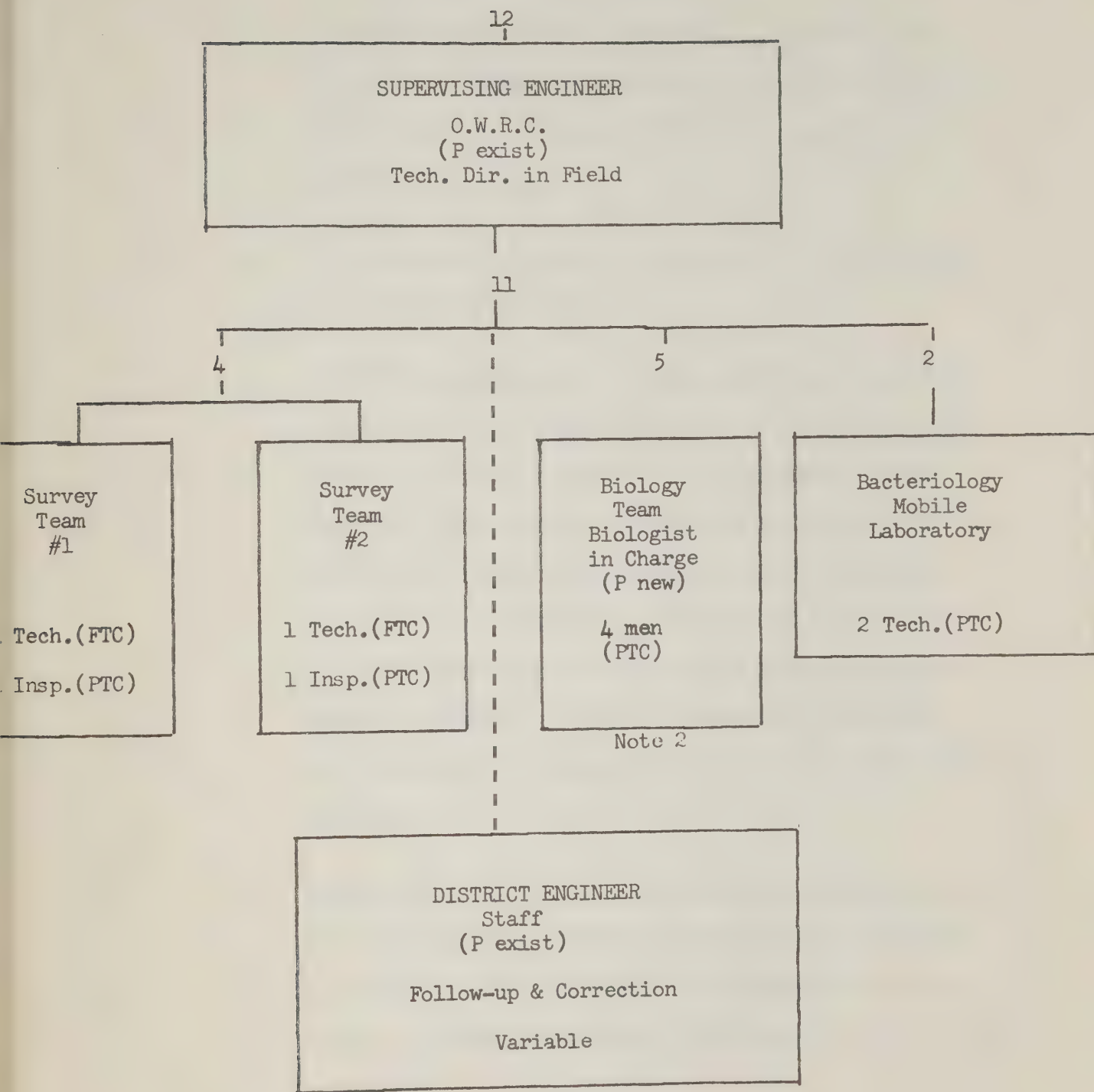
- P exist - Permanent existing staff
 P new - Permanent new staff
 PTC - Part time casual
 FTC - Full time casual

LEGEND

P. Exist. - Permanent Existing Staff
P. New - Permanent New Staff
P.T.C. - Part time Casual
F.T.C. - Full time Casual

Note 1

Assuming 40 working days
4000 cottages/40 days
= 100 cottages/day
= $\frac{100}{16}$ = 6+ cottages
per field man per day

CHART #2LEGEND

- exist - Permanent existing staff
 new - Permanent new staff
 C - Part time casual
 C - Full time casual

Note 2:

The Biology team will be present on the lakes for a brief time only.

The specific procedures proposed are as follows:

- Lakes or rivers will be selected on a priority basis such that a reasonable geographic distribution of effort will be achieved consistent with the severity of the problems encountered.
- The design unit will have a capacity of 4,000 cottages per year as noted above.
- A shoreline survey will be conducted during which each cottage and other establishment will be visited and all types of disposal systems will be evaluated. Where possible, the owner or occupant will be interviewed. In addition to visual inspections for sewage discharges, the survey will entail the collection of water samples along the shoreline for bacteriological and occasional chemical analyses, the use of dye testing techniques, and the study of topographic features to determine future problems.
- Water quality surveys will be conducted in conjunction with the shoreline survey of establishments to provide a profile of lake water quality encompassing bacteriological, chemical, biological, hydrological, and eutrophic conditions.
- Concurrently with the shoreline survey, corrective action will be initiated by negotiation with the owner or occupier and followed up until remedial measures are satisfactorily

completed. This will require more than one summer to complete. In 1970 the Province will be responsible for ensuring that the program is successful, with the co-operation of local health agencies to be encouraged, wherever possible. In future years the local authorities may assume a more direct role in the follow-up program.

- Continuing surveillance will be undertaken to ensure the adequacy of the control program.
- Co-ordinated reports on each phase of each project will be prepared and these will be used as a basis for continuing studies on lake capacity and the development of planning policies for recreational areas.

10.1.3 Priorities

It is recommended that first priority for 1970 be the survey and correction of Stony and Clear Lakes and, concurrently, to begin the correction of defective systems in the lakes surveyed by Health in 1967, 1968, and 1969 in the order Riley Lake, (Muskoka), Jack Lake (Peterborough), Six Mile Lake (Muskoka), Steenburg Lake (Hastings), Eugenia Lake (Grey), Lower Beverley Lake (Leeds), Otter Lake (Parry Sound), Bass Lake (Simcoe).

10.2 Legislative, Regulatory and Administrative Control

10.2.1 General

The changes in administrative procedures and new legislation or regulations suggested here are designed to strengthen the entire program involving cottage developments to minimize pollution. Some of the suggestions relate to the immediate problem and others to a long term control program that will prevent further environmental deterioration. Some changes in existing legislation are recommended and specific regulations are proposed to establish uniformity in private sewage disposal practice.

10.2.2 Recommendations

For convenient reference, each specific problem listed in Section 8 is repeated in this section followed by the related recommendation in CAPITAL letters.

Problem No. 1 - Lack of universal subdivision control and part-lot control.

RECOMMENDATION No. 1 - (a) THAT THE PLANNING ACT BE AMENDED TO REQUIRE
UNIVERSAL SUBDIVISION CONTROL FOR ALL LAND
IN ONTARIO; AND
(b) THAT LOTS ON A REGISTERED PLAN OF SUBDIVISION CANNOT BE RE-SUBDIVIDED WITHOUT APPROVAL OF THE DEPARTMENT OF MUNICIPAL AFFAIRS OR COMMITTEE OF ADJUSTMENT.

Problem No. 2 - Severances without Registered Plan where there is subdivision control and the Health Unit or Department of Health are not consulted.

RECOMMENDATION No. 2 - THAT MEDICAL OFFICER OF HEALTH APPROVAL BE REQUIRED FOR ANY SUBDIVISION EITHER BY SEVERANCE OR BY PLAN OF SUBDIVISION FOR ANY LOT NOT SERVED BY MUNICIPAL WATER OR SEWERAGE.

Problem No. 3 - (a) Certain areas of the province are not covered by building regulations requiring that a building permit be issued prior to construction.

(b) No requirement for Health Unit approval before building permit issued.

RECOMMENDATION No. 3 - (a) THAT LEGISLATION PROVIDE THAT THERE BE IN EFFECT IN EVERY MUNICIPALITY AND IN TERRITORY WITHOUT MUNICIPAL ORGANIZATION A BUILDING REGULATION, AND THAT NO BUILDING SHALL BE COMMENCED UNTIL A PERMIT HAS BEEN ISSUED.

(b) THAT SUCH REGULATION PROVIDE FOR THE APPROVAL OF THE APPROPRIATE HEALTH AUTHORITY PRIOR TO THE ISSUANCE OF A BUILDING PERMIT WHERE MUNICIPAL WATER AND SEWER FACILITIES ARE NOT AVAILABLE.

Problem No. 4 - Lack of uniformity of private sewage disposal systems, practices and standards.

RECOMMENDATION No. 4 - THAT A PROVINCIAL REGULATION BE PASSED UNDER THE PUBLIC HEALTH ACT PROVIDING FOR MINIMUM STANDARDS, AND UNIFORM ADMINISTRATIVE PROCEDURES FOR PRIVATE SEWAGE DISPOSAL SYSTEMS, AND THAT IN MUNICIPALITIES WHERE SEWAGE HOLDING TANKS

SERVED BY SEWAGE HAULAGE SYSTEMS ARE NECESSARY
A SEWAGE HAULAGE SYSTEM SHALL BE ESTABLISHED
AND OPERATED BY THE MUNICIPALITY, AND THAT
PROVISION BE MADE FOR LOANS FOR INITIAL FINANC-
ING OF SUCH SYSTEMS REPAYABLE BY REQUIRED RATE
SCHEDULE OR ON AN AREA RATE.

- Problem No. 5 - Failure of municipalities to pass by-laws to
assist Health Unit authorities in the regula-
tion and inspection of sewage disposal systems.

RECOMMENDATION No. 5 - AS FOR 4 ABOVE.

- Problem No. 6 - Lack of staff in Health Unit to supervise
adequately existing and new sewerage systems.

RECOMMENDATION No. 6 - THAT THE INSPECTION STAFF OF HEALTH UNITS IN
RECREATIONAL AREAS BE INCREASED THROUGH 100%
GRANT SUPPORT TO PROVIDE ADDITIONAL STAFF FOR
ADEQUATE CONTROL OF PRIVATE SEWAGE DISPOSAL
SYSTEMS.

- Problem No. 7 - Pressure for development of marginal lands
causing greater difficulties in pollution
control and increasing use of the Precambrian
Shield area and winterization of cottages.

RECOMMENDATION No. 7 - THAT PROCEDURES BE INAUGURATED TO PROVIDE THAT
WHEN A HEALTH UNIT HAS ANY QUESTION AS TO THE
SUITABILITY OF THE SOIL IN A SUBDIVISION WHERE
ON-SITE SEWAGE DISPOSAL IS TO BE USED THEY MAY
ASK THE DEPARTMENT OF MUNICIPAL AFFAIRS TO
REQUIRE THE SUBDIVIDER TO PROVIDE SOIL DATA.

Problem No. 8

- Lack of master plan for development of recreation areas, e.g. undesirable industrial development may occur in an ideal recreational area.

RECOMMENDATION No. 8 - THAT POLICIES BE ESTABLISHED AT THE CABINET LEVEL TO PROVIDE FOR THE ORDERLY DEVELOPMENT OF RECREATIONAL RESOURCE AREAS AND THAT AN OVERALL PLAN BE PREPARED WHICH WOULD EMBODY PRIORITIES BY AREA OR AREAS FOR OVERALL DEVELOPMENT INCLUDING RECREATION, RECOGNIZING THAT CERTAIN USES SUCH AS INDUSTRIAL AND ASSOCIATED URBAN DEVELOPMENT MAY NOT BE COMPATIBLE WITH THE OPTIMUM USE OF LAKES AND RIVERS FOR RECREATIONAL PURPOSES.

Problem No. 9

- Lack of lake development planning and capacity plans. At present, when a proposal for resort development is submitted only the characteristics of the specific site are considered such as its suitability for building lots or for septic tank operation. Very little consideration, if any, is given to the effects that the development would have on those many facets that the aquatic environment, the shoreline and backland are called upon to provide. Also, very little consideration is given to the relationship between the number of people who can use a lake for any given purpose, and its depth, area, flow, shape, etc.

RECOMMENDATION No. 9 - THAT A STUDY PROGRAM BE INSTITUTED WHICH WOULD ESTABLISH CRITERIA TO CLASSIFY LAKES INTO GROUPS BASED UPON THEIR ABILITY TO SUPPORT VARIOUS TYPES AND INTENSITIES OF RECREATIONAL DEVELOPMENT.

Problem No. 10 - Induced nutrient enrichment of recreational waters.

RECOMMENDATION No. 10 - (a) THAT THE LAND USE AND DEVELOPMENT PLANS RECOMMENDED IN ITEMS 8 AND 9 INCLUDE CONSIDERATION OF THE EFFECT OF DEVELOPMENT ON WATER QUALITY;

(b) THAT WHERE POSSIBLE LODGES, RESORTS AND SIMILAR DEVELOPMENT BE REQUIRED TO EITHER PROVIDE SEPTIC TANK SYSTEMS WITH SUBSURFACE SEEPAGE BEDS OR, IF THIS IS NOT POSSIBLE, WASTE STABILIZATION POND OR OTHER TREATMENT, OR STORAGE AND COLLECTION FACILITIES WITH SPRAY IRRIGATION OR HAULAGE OF THE EFFLUENT TO PREVENT THE DISCHARGE OF WASTE WATERS TO RECREATIONAL LAKES;

(c) THAT EFFLUENT PRODUCING SEWAGE WORKS BE REVIEWED IN THE LIGHT OF THEIR EFFECT ON THE RECEIVING WATERS USING AS A GUIDE THE WATER QUALITY OBJECTIVES OF THE ONTARIO WATER RESOURCES COMMISSION, AND REQUIRE THE INSTALLATION OR MAINTENANCE OF ADEQUATE TREATMENT PROCESSES.

Problem No. 11 - Sewage, refuse and oil pollution from boats.

RECOMMENDATION No. 11 - THAT THE BOATING REGULATION UNDER THE ONTARIO WATER RESOURCES COMMISSION ACT BE VIGOROUSLY ENFORCED AND THAT THE LAKE DENSITY CONSIDERATIONS UNDER RECOMMENDATION No. 9 INCLUDE THE PROBLEMS OF OIL AND NOISE POLLUTION INCLUDING POOR DESIGN AND OPERATION OF MOTORS.

Problem No. 12 - Pollution of water as a result of ice-fishing activities.

RECOMMENDATION No. 12 - THAT THE REGULATION UNDER THE GAME AND FISHERIES ACT BE AMENDED TO PROVIDE THAT THROUGHOUT ONTARIO NO STRUCTURE SHALL BE ERECTED ON THE ICE OF ANY LAKE OR RIVER WITHOUT THE AUTHORITY OF A PERMIT AND THAT THE REGULATION ESTABLISH REQUIREMENTS FOR REMOVAL OF BUILDINGS, PREVENTION OF DEPOSITS ON THE ICE OF ANY MATERIAL, PROTECTION OF WATER INTAKE AREAS AND THAT SUITABLE PROVISION BE MADE TO REGULATE SEWAGE COLLECTION AND DISPOSAL.

Problem No. 13 - Lack of authentic public information and the dissemination of misleading information on pollution and subdivision control problems.

RECOMMENDATION No. 13 - THAT GUIDELINE BOOKLETS BE PREPARED FOR THE INFORMATION OF THE GENERAL PUBLIC AND FOR LAND DEVELOPERS EXPLAINING THE SIGNIFICANCE OF VARIOUS ENVIRONMENTAL FACTORS ON QUALITY OF LIVING IN RECREATIONAL AREAS, STEPS CITIZENS CAN TAKE TO PROTECT THE ENVIRONMENT, AND PROCEDURES THAT

SHOULD BE FOLLOWED IN SELECTING LAND FOR DEVELOPMENT, INCLUDING CONSIDERATIONS OF DRAINAGE PATTERN, SLOPE, DEPTH AND TYPE OF SOIL, SEPARATION OF SEWAGE DISPOSAL SYSTEMS FROM BUILDINGS, BATHING AREAS, WATER INTAKE AREAS, WELLS, LAKES, STREAMS, LOT SIZE, LAKE FRONTAGE, AREA SATURATION DUE TO HIGH DENSITY OF POPULATION, HIGH WATER TABLES, PERIODIC FLOODING, SEASONAL USE AND TENDENCY TO ALL YEAR USE, HIGH RATE OF WATER CONSUMPTION DUE TO AUTOMATIC LAUNDRY MACHINES, WATER CONSERVATION, COSTS FOR PLANNING, ADMINISTRATIVE PROCEDURES RE APPLICATIONS, PROJECT INVESTIGATION, ENGINEERING REPORTS, COSTS, AGENCY RESPONSIBILITY, ETC.

Problem No. 14

- The general assumption by developers, municipalities, certain local health authorities and others that 15,000 square feet without any municipal services or 7,500 square feet with one municipal service is an acceptable lot size regardless of the soil or topographic conditions or the extent of existing or proposed development.

RECOMMENDATION No. 14

- THAT WHERE ON-SITE SERVICES FOR EITHER WATER OR SEWAGE DISPOSAL OR BOTH ARE REQUIRED, A MINIMUM LOT SIZE OF 1 ACRE BE A GUIDELINE RECOMMENDATION APPLICABLE TO THE PRECAMBRIAN SHIELD AREA, AND THAT A MINIMUM OF $\frac{1}{2}$ ACRE BE RECOMMENDED ELSEWHERE AND FURTHER, THAT ANY REDUCTION FROM THE ABOVE

IN REQUIRED SIZE BE SUPPORTED BY AN ENGINEERING REPORT ESTABLISHING THE ADEQUACY OF THE REDUCED AREA, AND IT SHOULD BE FURTHER RECOGNIZED THAT IN PARTICULAR INSTANCES LARGER AREAS THAN THOSE RECOMMENDED ABOVE MAY BE NECESSARY, AND IN OTHER CASES NO DEVELOPMENT SHOULD BE PERMITTED.

Problem No. 15

- Some health authorities are at present recommending approval of certain lots on plans of subdivision on the basis of pit privies where there is insufficient soil for a septic tank system, whereas it is well known that most cottagers will eventually change from pit privies to an indoor flush toilet system.

RECOMMENDATION No. 15 - THAT NO UNSERVICED LOT BE APPROVED IF IT IS TOPOGRAPHICALLY INCAPABLE OF SUSTAINING ON-SITE SEWAGE DISPOSAL ADEQUATE FOR FULL-TIME OCCUPANCY.

Problem No. 16

- The volume of new subdivision lots submitted for approval this year is such that, under present policies, more potential pollution problems may be created than will be corrected in this year's proposed abatement program. At this moment there are 171 proposed plans of subdivision for cottages before the Department of Municipal Affairs for consideration. These plans contain more than 7,000 lots.

RECOMMENDATION No. 16 - THAT THE FOLLOWING POLICIES BE ADOPTED WITH REGARD TO PLANS OF SUBDIVISIONS TO BE CONSIDERED IN 1970, AND UNTIL AN OVERALL DEVELOPMENT

POLICY IS ESTABLISHED:

- (a) THOSE LOTS WHICH ARE RECOMMENDED UNCONDITIONALLY BY THE HEALTH AUTHORITY WILL BE APPROVED.
- (b) THOSE LOTS WHICH ARE RECOMMENDED BY THE HEALTH AUTHORITY SUBJECT TO ALTERATION BY FILL OR GRADING SHALL HAVE SUCH FILL OR GRADING DONE PRIOR TO FINAL APPROVAL.
- (c) THOSE LOTS WHICH CAN BE RECOMMENDED FOR APPROVAL BY THE HEALTH AUTHORITY ONLY ON THE BASIS OF PIT PRIVIES, CHEMICAL TOILETS ETC. SHALL NOT BE APPROVED IN 1970.

Problem No. 17

- The present legislation does not give the Department of Health the authority to enter upon private premises for the purposes of inspection nor the authority to issue orders for necessary correction work or to order the closing of premises if the orders are not obeyed. These powers are essential for the 1970 program recommended in this report.

RECOMMENDATION No. 17 - THAT ENABLING LEGISLATION AND REGULATION BE PROVIDED TO GIVE THE DEPARTMENT OF HEALTH PERSONNEL RIGHT OF ENTRY UPON PRIVATE PREMISES FOR THE PURPOSE OF ENFORCING THE ACT AND REGULATIONS, AND, AT THE APPROPRIATE LEVEL, AUTHORITY TO ISSUE CORRECTION WORK ORDERS AND CLOSURE ORDERS AS NECESSARY, BOTH SUBJECT TO ADEQUATE APPEAL AND REVIEW PROCEDURES.

Problem No. 18

- There is an apparent lack of funds to provide adequate inspection services for lots which are not served by municipal sewers.

RECOMMENDATION No. 18 - THAT A FEE SCHEDULE BE ESTABLISHED TO DEFRAY THE COSTS OF INSPECTION OF LOTS WHICH ARE NOT SERVED BY MUNICIPAL SEWERS. e.g. THE CONDITIONS OF DRAFT APPROVAL OF A PLAN OF SUBDIVISION COULD REQUIRE A LOT LEVY FOR THIS PURPOSE.
(EST. \$50. - \$100. PER LOT.)

10.2.3 Summary of Legislative, Regulatory and Procedural Changes

10.2.3.1 The Department of Municipal Affairs

The Planning Act

Legislation

It is recognized that subdivision control could be enforced in all parts of the Province not now covered by means of a Minister's Order made pursuant to Section 27(1)(b) of The Planning Act. This method, however, involves a number of procedures and does not make clear what areas are covered without a search of Registry Office records.

There are several other weaknesses in the present system which could be overcome by change in The Planning Act and, therefore, the following amendments are recommended:

Section 26 - should be amended to provide that all land in the Province of Ontario is within an area of subdivision control. This section should be further amended to provide that no part of a lot or block could be resubdivided without approval.

These amendments would require other change to Section 26.

Section 27 - should be amended to delete all reference to the powers conferred to the Minister to create areas of subdivision control.

Section 31 - should be amended to provide that all sections of the Province have a minimum form of building regulation.

This regulation would require that a permit be issued prior to any building being commenced and would further require that no building permit would be issued for which a type of sewage disposal or water supply would not be provided by the municipality until such site had been approved by the appropriate health authority.

Procedures.

The Department of Municipal Affairs should ensure that no subdivision of land should take place in an area not served by municipal water and sewers, either by registered plan of subdivision or with the consent of the Minister or Committee of Adjustment until the approval of the appropriate health authority has been given.

10.2.3.2 The Department of Health

The Public Health Act

Legislation

It is recommended that The Public Health Act be amended during the present session of the Legislature to empower the Minister of Health to make regulations providing for minimum standards and uniform administrative procedures for private sewage disposal systems, and that in municipalities where sewage holding tanks served by sewage haulage systems are necessary a sewage haulage system shall be established and operated by the municipality, and that provision be made for loans for initial financing of such systems repayable by

required rate schedule or on an area rate and that enabling legislation and regulation be provided to give the Department of Health personnel right of entry upon private premises for the purpose of enforcing the Act and Regulations, and, at the appropriate level, authority to issue correction work orders and closure orders as necessary, both subject to adequate appeal and review procedures.

Regulation

A regulation as described under Legislation above be made to provide uniform standards and procedures for private sewage disposal systems.

A regulation may also be necessary to provide detailed procedures for the recommended powers to issue orders and for appeal and review.

10.2.3.3 Ontario Water Resources Commission

The Ontario Water Resources Commission Act

Legislation

It is recommended that Section 31(4)c of the Act be rescinded to remove from exemption the approval requirement for effluent producing sewage works serving 5 or fewer private residences.

10.2.3.4 Department of Lands and Forests

Regulation

It is recommended that regulations under Section 84.4 of The Game and Fish Act be amended to provide that throughout Ontario no structure shall be erected on the ice of any lake

or river without the authority of a permit and that the regulations provide for the removal from the ice of all structures, materials, and waste deposits and for the protection of areas in the vicinity of water intakes.

10.2.4 Provincial Assistance to Health Units

10.2.4.1 General

Recommendation No. 6 refers to the need for additional staff by the Health Units for private sewage disposal control and No. 18 suggests that money be collected from developers to finance the control program for new lots.

10.2.4.2 Discussion

The concept of the report is that the Province will carry out a comprehensive program to detect and correct polluting systems on a programmed basis, and that money will be made available to local health agencies with recreational areas, in excess of their regular budget, on a 100% grant basis to support a specific program of accelerated detection and correction of existing problems and greatly intensified control procedures for newly proposed unserviced lots.

10.2.4.3 Cost Estimates

The cost is estimated on the basis that the existing staff will be capable of continuing their present program of dealing with complaints and requests for assistance regarding private systems, but they will not be able to put out the major effort needed to roll up the problem over 5 or 10 years. A significant new load is imposed on the local inspectors to get an effective control on the annual increment of newly created lots.

A policy decision is required to establish the level of provincial effort to roll up the existing problem and hence to establish the time in which it can be accomplished. In addition, the importance of the total program and the level of financial support involved suggests the need for a further policy decision on whether the Province or the local health agencies should be directly responsible for the entire private sewage disposal program.

One means of calculating the cost of assistance to local health agencies to provide effective control for newly created lots is as follows:

- Assume 11,000 new cottage lots per year.
- Assume that each man will have 200 working days per year available on the problem, (including getting names and addresses, talking to contractors, plumbers, etc.)
- Assume that each new cottage will require 1 full working day to see the site, talk to the contractor, see the construction, approve for use, etc;

Then each man can do 200 new cottages per year.

For 11,000 cottages - $\frac{11,000}{200} = 55$ additional full time men.

Yearly cost -

\$7,000. + supervision costs + office Accommodation and clerical help, + travel costs, etc. = \$10,000./man;

Therefore the total cost of support program would

be about $55 \times 10,000 = \underline{\underline{\$550,000.00}}$

11. ESTIMATES OF COST11.1 Budget and Staff Requirements for Survey and Correction
(1 Unit - 4000 cottage/year).

	<u>Salary</u>	<u>Travel</u>	<u>Mainten- ance</u>	<u>Total</u>
<u>Field Survey Group(DEPT.OF HEALTH)</u>				
Project Engineer (present staff)				
Clerical staff (1)	5,000			
Field Engineer (1)	10,000	1,000		
Field Supervisors (2)	15,000	2,000		
Field men (16 casual)	20,000	16,000		
Boats rental and equipment	_____	_____	8,000	
	50,000	19,000	8,000	<u>77,000</u>
<u>Bacteriological Laboratory (O.W.R.C.)</u>				
Summer casual (2)	3,000	2,000	4,000	<u>9,000</u>
<u>Water Quality Survey crew (O.W.R.C.)</u>				
Engineer (present staff)				
Technician San. Eng. (2)	14,000	1,000		
Summer casual (2)	3,000	1,000		
Biologist (1)	10,000	1,000		
Boat rental and equipment	_____	_____	6,000	
	27,000	3,000	6,000	<u>36,000</u>
<u>Correction Program, Dept. of Health</u>				
Supervisory Engineer (1)	10,000	1,000		
Public Health Inspectors (5)	<u>40,000</u>	<u>5,000</u>	<u>2,000</u>	
	50,000	6,000	2,000	<u>58,000</u>
<u>TOTAL</u>	<u>\$130,000</u>	<u>30,000</u>	<u>20,000</u>	<u>\$180,000</u>

11.2 Health Unit Support System

	<u>Salary</u>	<u>Travel</u>	<u>Maintnce</u>	<u>Total</u>
Public Health Inspectors (55)	\$385,000.	55,000.	110,000.	550,000.

11.3 Summary Budgets

1970 - 71 Survey and correction (1 unit)	\$180,000.
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Health Unit support program ($\frac{1}{3}$ of 550,000.)	275,000.
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455,000. *

1971 - 72 Survey and correction (1 unit)	180,000.
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Health Unit support program	550,000.
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\$ 730,000. *

Note: * This cost may be offset commencing

in the summer of 1970 by a per lot

levy on proposed unserviced lots.

e.g. \$50 X 11,000 lots =

\$ 550,000. per year.

